

WHAT IS CLAIMED IS:

- 1                    1.        A method of controlling a temperature of an applicator body, the  
2 method comprising:  
3                    providing an applicator body that comprises at least one contact surface;  
4                    delivering a coolant through a conduit in at least a portion of the applicator  
5 body at a substantially constant rate;  
6                    delivering energy to at least one of the distal end of an applicator body and  
7 coolant through one or more heating elements so that the contact surface of the applicator  
8 body is cooled to a desired temperature.
- 1                    2.        The method of claim 1 comprising contacting the contact surfaces  
2 against a surface adjacent pelvic support tissue.
- 1                    3.        The method of claim 2 wherein the cooled contact surface cools the  
2 contacted tissue that is adjacent the pelvic support tissue to a temperature between 0°C and  
3 40°C.
- 1                    4.        The method of claim 1 wherein the desired temperature is between  
2 about - 5°C and about 3°C.
- 1                    5.        The method of claim 3 wherein the desired temperature is about -2°C.
- 1                    6.        The method of claim 1 wherein the coolant comprises a R134a  
2 refrigerant gas.
- 1                    7.        The method of claim 1 wherein the contact surface comprises one or  
2 more electrodes.
- 1                    8.        The method of claim 7 comprising reducing a power level of the  
2 energy delivered to the heating element when a therapeutic heating energy is delivered to the  
3 one or more electrodes.
- 1                    9.        The method of claim 1 comprising:  
2                    monitoring a temperature of the one or more electrodes; and  
3                    adjusting a power level of the energy delivered to the heating element to  
4 maintain the contact surface of the applicator body at substantially the desired temperature.

1                   10.     The method of claim 1 wherein the heating element comprises a  
2 plurality of resistive heating elements positioned within the applicator body.

1                   11.     The method of claim 10 wherein the resistive heating element(s)  
2 contact a portion of the applicator body surrounding the coolant.

1                   12.     The method of claim 10 wherein the resistive heating element(s) may  
2 be positioned in such a way as to minimize a flow related spatial distribution of temperature  
3 across the contact surface.

1                   13.     The method of claim 12 wherein the spatial distribution of temperature  
2 across the contact surface is reduced to less than about 2 degrees Celsius.

1                   14.     The method of claim 12 wherein the resistors are chosen to be at  
2 different wattage values in such a way as to reduce a flow related spatial distribution of  
3 temperature across the contact surface while still permitting use of a single power source.

1                   15.     The method of claim 1 wherein providing the applicator body  
2 comprises providing the coolant in a path for distributing the coolant substantially evenly  
3 over the contact surface.

1                   16.     The method of claim 15 wherein the path is a serpentine path.

1                   17.     An applicator that delivers energy comprising: /  
2 an applicator body comprising a proximal portion and a distal portion;  
3 a contact surface on the distal portion of the applicator body;  
4 a conduit that delivers a coolant on a path through at least a part of the distal  
5 portion of the applicator body; and  
6 one or more heating elements coupled to the distal portion of the applicator  
7 body to deliver a heating energy to the coolant in the conduit, wherein the energy is sufficient  
8 to heat the coolant so that the applicator contact surface is at a desired temperature.

1                   18.     The applicator of claim 17 wherein the contact surface comprises at  
2 least one electrode.

1                   19.     The applicator of claim 18 further comprising an RF power source  
2 coupled to the electrodes.

1                   20.     The applicator of claim 18 further comprising a control assembly that  
2 controls the delivery of the coolant and the heating element(s).

1                   21.     The applicator of claim 18 wherein the heating energy delivered to the  
2 heating element(s) is discontinued when a therapeutic energy is delivered to the electrodes.

1                   22.     The applicator of claim 17 further comprising a power supply coupled  
2 to the heating element(s), wherein the power supply is controlled with a temperature control  
3 algorithm.

1                   23.     The applicator of claim 17 wherein the heating element(s) comprises  
2 resistive heating elements.

1                   24.     The applicator of claim 23 wherein the heating elements are positioned  
2 to reduce a temperature differential across the contact surface to less than about 2 degrees  
3 Celsius.

1                   25.     The applicator of claim 23 wherein the contact surface defines a  
2 proximal end and a distal end, wherein the heating elements are positioned to deliver more  
3 energy toward the proximal end of the contact surface.

1                   26.     The applicator of claim 17 wherein a flow of the coolant is  
2 substantially constant.

1                   27.     The applicator of claim 17 wherein the desired temperature of the  
2 contact surface is between about - 5°C and about 3°C.

1                   28.     The applicator of claim 17 wherein the coolant comprises a R134a  
2 refrigerant gas.

1                   29.     The applicator of claim 17 wherein the coolant path through the distal  
2 portion of the applicator is a serpentine path.

1                   30.     The applicator of claim 17 further comprising a temperature sensor that  
2 monitors a temperature of the contact surface.

1                   31.     A system for heating a target tissue adjacent an intermediate tissue, the  
2 system comprising:     ✓

3 a body comprising one or more electrodes oriented for contacting the  
4 intermediate tissue;

5 a control system coupled to a power source and to the electrode(s), the control  
6 system adapted to selectively energize the electrode(s) so as to deliver a therapeutic heating  
7 energy through the intermediate tissue to the target tissue;

8 a cooling assembly configured to control a temperature of the contact surface,  
9 wherein the cooling assembly comprises:

10 a flow conduit positioned in the body to deliver a coolant adjacent the  
11 electrode(s);

12 a heating element positioned adjacent the electrode(s) and flow conduit  
13 to deliver energy to the flow conduit;

14 a temperature sensor positioned adjacent the electrode that measures a  
15 temperature of the electrode; and

16 a control assembly to selectively control the delivery of energy to the heating  
17 element and energy to the electrode(s).

1 32. The system of claim 31 further comprising the power source, wherein  
2 the power source is an RF power source.

1 33. The system of claim 31 wherein the temperature sensor comprises a  
2 thermocouple.

1 34. The system of claim 31 wherein the coolant comprises a R134a gas.

1 35. A system for controlling a temperature of an intermediate tissue  
2 contacted by a contact surface of an applicator, the system comprising:

3 a processor;

4 a memory coupled to the processor, the memory configured to store a plurality  
5 of code modules for execution by the processor, the plurality of code modules comprising:

6 a code module for delivering a coolant through a conduit in the  
7 applicator;

8 a code module for monitoring a temperature of the contact surface; and

9 a code module for controlling delivery of energy to a heating element  
10 that controls a temperature of the coolant adjacent the contact surface.